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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,086	05/15/2007	Duncan Bain	105MC-034	7471

32192 7590 12/23/2009

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CHAMPAIGN, IL 61821-3535

EXAMINER	
LIU, JONATHAN	

ART UNIT	PAPER NUMBER
3673	

MAIL DATE	DELIVERY MODE
12/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,086	BAIN ET AL.	
	Examiner	Art Unit	
	JONATHAN J. LIU	3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2009* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In response to remarks filed 9/24/2009

Power of Attorney

1. While the present application file does not contain a new power of attorney appointing Galgano and Associates authorization to represent the instant application's party (inventors), it appears that Thomas Galgano and Jessica Bower are acting in a representative capacity. An appropriate power of attorney should be filed to preclude any subsequent confusion.

Response to Arguments

2. Applicant's arguments filed 9/24/2009 have been fully considered but they are not persuasive.

Regarding applicant's arguments that *the thermochromic strip and the flag formed of shaped memory allow need not be shown in the drawings because these features are not necessary for the understanding of the subject matter of the invention* - contrary to applicant's assertion, these elements are necessary for the understanding of the invention. **Furthermore, the drawings must show every feature of the invention specified in the claims**.

In regards to applicant's arguments as to the previous 112, 1st paragraph rejection where it *would have been clear to a person of ordinary skill in the art how the solenoid or mechanical actuator irreversibly forms a shaped memory alloy due to an electrical stimulus* - applicant has not provided any evidence for such assertion. Such speculative statements as "it would be clear to a person of ordinary skill in the art..." are

insufficient to overcome a 112 enablement rejection. Accordingly, the rejection remains and is repeated below.

With regards to applicant's arguments that Votel does not disclose *the detector being below the impermeable layer* – it is noted that such is a matter of viewing perspective. That is, the protector of Votel (figure 156) when viewed upside down, meets the aforementioned limitations [i.e. the detector being below the impermeable layer and above a mattress]. Furthermore, a recitation of the intended use of the claimed invention must result in a **structural difference** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Additionally, the fact that applicant has recognized another advantage [means for detecting if fluid has penetrated though the *impermeable* layer] which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious [citations omitted].

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The inventors' signatures appear to be photocopied multiple times and are not legible. Appropriate correction is required.

It is unclear whether Sarah Nicholson, "widow of Graham Nicholson and inheritor of his rights," is in fact the *legal representative, executor, or administrator* of the

deceased inventor (Graham Nicholson). Such title should be explicitly stated in the Oath/Declaration.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the *positive/negative tracks on the fabric*, *thermochromic strip*, and the *flag formed of a shaped memory alloy* must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to because they contain faded text/drawings, line or marks in the original document; black/white photographs (they are unclear). **Additionally**, the drawing sheet (figures 5-6) submitted is **not** labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. Color photographs and color drawings are not accepted unless a petition filed under 37 CFR 1.84(a)(2) is granted. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and, unless already present, an amendment to include the

following language as the first paragraph of the brief description of the drawings section of the specification:

> The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings and black and white photographs have been satisfied. See 37 CFR 1.84(b)(2).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 24-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear how the limitations of claims 24-25 work - how does a solenoid or mechanical actuator irreversibly form a shaped memory alloy due to an electrical stimulus? Appropriate explanation/proof is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Votel (US 6,341,393). Votel discloses a mattress protector (2600) to shield a mattress or mattress core from body fluids, the protector comprising a shielding cover (2612) to fit over the mattress or mattress core, the shielding cover having a layer that is impermeable to body fluids and that is outermost in use when the shielding cover is fitted over the mattress or mattress core (e.g. when the protector is flipped upside down), and a detector (e.g. 2614, 2616 *or* col. 52, lines 43-46) within the cover or below or in an under layer of the cover (e.g. 2608) and above the mattress or mattress core when the shielding cover is fitted over the mattress or mattress core, the detector being below the impermeable layer of the shielding cover (e.g. when the protector is flipped upside down), to detect body fluid that has passed into or through the cover, the fluid having penetrated the impermeable layer of the shielding cover.

Regarding claim 26, the mattress protector is in combination with a mattress (col. 51, line 45).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 2-11, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votel (US 6,341,393) in view of Peters (US 5,575,025). Votel discloses the invention of claim 1, including the limitations of claim 2 wherein an inter-

layer or under-layer has a dye that is activated by a body fluid to provide a visual indication of presence of the body fluid (col. 52, lines 43-46). However, Votel does not teach wherein the cover is transparent. Peters teaches a mattress protector with a transparent cover (col. 2, lines 23-25). It would have been obvious to one of ordinary skill in the art to manufacture the cover of Votel to be transparent. The motivation would have been to provide an easier and more convenient means to visually recognize when the mattress protector is wet. Therefore, it would have been obvious to modify the invention to Votel as specified in claim 2.

With regards to claim 3, the dye is not reactive to water vapor (Votel: col. 52, lines 43-46).

In regards to claim 4, the dye is specifically reactive to one or more organic compounds in urine, and/or other body fluids (Votel: col. 52, lines 43-46).

With regards to claim 5, the inter-layer or under-layer is absorbent (Votel: col. 51, line 22).

In regards to claim 6, the inter-layer or under-layer is made from a stretchable material (Votel: col. 51, lines 28-31).

In regards to claim 7, the detector comprises electrically conductive material in or associated with the inter-layer or under-layer whereby the detector responds to changes in electrical conductivity to detect body fluid that has passed through the cover (Votel: col. 52, lines 18-35).

With regards to claim 8, the detector comprises electrically conductive threads or fibres (Votel: 2614, 2616).

In regards to claim 9, the electrically conductive threads or fibres are configured in rows or a matrix over the inter-layer or under-layer (Votel: see figure 156).

With regards to claim 10, the electrically conductive threads form the warp or weft of the inter-layer or under-layer (Votel: see figure 156).

Regarding claim 11, Votel further discloses a processor (Votel: 2618) which monitors the electrical conductivity between neighboring conductive threads so that in the event of a leak of ionic (electrically conductive) fluid into or through the mattress protector, a short circuit between threads will be detected and recorded.

In regards to claim 14, positive and negative tracks (2614, 2616) are provided on opposite sides of the fabric whereby wrinkles or folds in the fabric will not bring positive and negative tracks together.

With regards to claim 15, a protective layer of fabric (2606) is applied covering the electrical tracks, to provide mechanical separation between tracks in the event of creasing or folding, the layer being pervious to fluids.

Regarding claim 16, although Votel is silent to whether the conductive threads or fibres are included in the system as a knitted fabric, rather than a woven fabric - it would have been obvious to include the conductive threads in a knitted fabric, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious mechanical expedient [citations omitted]. Therefore, it would have been obvious to include the conductive threads in a knitted fabric as an alternative means to provide a soft, comfortable, and flexible layer for the patient/user.

In regards to claim 17, the mattress protector is of a woven fabric (col. 51, lines 18-21) and slits are *inherently* provided in the woven fabric so as to allow expansion of the material.

13. Claims 12-13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votel (US 6,341,393) in view of Peters (US 5,575,025) as applied to claims 7 and 11, and in further view of Boone et al. (US 7,038,588). With regards to claim 12, While Votel is silent to whether the processor is a microprocessor, such is well known in the art. Nonetheless, Boone et al. teach a monitoring/sensor system able to detect fluids from a patient (col. 7, lines 52-53, and as shown in *432*) comprising a microprocessor (*necessarily* in member 48') adapted to be in communication with an external device (e.g. 118) to determine if any leak events have occurred. It would have been obvious to one of ordinary skill in the art to modify the processor of Votel to be a microprocessor as well as to include the external device as taught by Boone et al. as a reliable means to store, retrieve, and view patient data. Therefore, it would have been obvious to modify the invention to Votel as specified in claim 12.

In regards to claim 13, the microprocessor is within or below the cover (Votel: figure 156) and is adapted to be in communication with an inductive link.

Regarding claim 18, Votel as modified teaches wherein when the detector detects body fluid that has passed through the cover a signal is substantially immediately transmitted to a remote receiver (Votel: col. 52, lines 28-31) connected to a computer (Boone: 48').

With regards to claim 19, the mattress protector has a radio frequency transmitter to transmit the signal to the receiver (Votel: col. 52, lines 29-31). While Votel does not teach wherein the transmitter is *inside* the mattress, such would have been within an ordinary level of skill in the art since it has been held that rearranging parts of an invention involves only routine skill in the art [citations omitted]. The motivation would have been to provide a means effectively "hide" the transmitter from a patient/user from *feeling* it (because of the thickness of the mattress); otherwise, if a patient did "feel" the transmitter (e.g. in the protector), it could result in the patient being uncomfortable. Therefore, it would have been obvious to situate the radio frequency transmitter inside the mattress.

In regards to claim 20, the computer is programmed to record the time and location of the event, so that suitable action may be taken (Boone: similar to 514).

14. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votel (US 6,341,393) in view of Peters (US 5,575,025) as applied to claim 7, and in further view of DePonte (US 5,291,181) and Birch et al. (US 5,869,972). Votel as modified, teaches the invention of claim 7. However, Votel does not teach wherein a microcontroller effects an irreversible change in a visible indicator. DePonte teaches a patient monitoring system comprising a detector that detects body fluid that has passed through a cover, and a circuit (80) that prompts a microcontroller to effect a change in a visible indicator (32). It would have been obvious to one of ordinary skill in the art to use the indicator means of DePonte with the invention to Votel. The motivation would have been to provide an alternative means to detect wetness of the mattress protector.

Therefore, it would have been obvious to modify the invention to Votel as specified in claim 21. Furthermore, Votel as modified does not teach wherein the change of the indicator is irreversible. Birch teaches to use a thermochromic strip (57) as an irreversible means to measure the temperature of a fluid. Because such measuring means is well known, it would have been obvious to one of ordinary skill in the art to include such means with the invention to Votel (as modified), i.e. as the visible indicator means. The motivation would have been to provide an informative means (and record) of the *temperature range* of the wetness (i.e. fluid) of mattress protector. Therefore, it would have been obvious to modify the invention to Votel as specified in claim 21.

With regards to claim 22, the visible indicator is visible from the outside of the mattress cover via an appropriate clear window.

In regards to claim 23, the visible indicator comprises a combination of a small heating element (DePonte: 82) inside the mattress cover, and an irreversible thermochromic strip (Birch: 57) in the corresponding place outside the mattress cover.

15. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Votel (US 6,341,393) in view of Peters (US 5,575,025) as applied to claim 7, and in further view of Applicant's Remarks (filed 9/24/2009). With regards to claims 24-25, while Votel teaches alternative means to record/alert/detect the status of the mattress protector (e.g. wet or dry), Votel also implicitly implies other methods may be utilized. Thus, the means of claims 24-25 fall well within an ordinary level of skill in the art, as an alternative means to detect/alert/record the status of the mattress protector. Furthermore, Applicant admits that such construction is well known in the art, "It would

be clear to a person of ordinary skill in the art that a solenoid or mechanical actuator would be used to move the position of the flag. Shaped memory alloys are also well known as material that will regain a predetermined shape when subjected to an electrical stimulus. It would be clear to a person of ordinary skill that the change in electrical conductivity detected by the detector could cause an electrical stimulus to stimulate the shaped memory alloy..." Thus, it would have been obvious to one of ordinary skill in the art to utilize the claimed mechanical flag and solenoid/actuator to signal that a leak in the protector of Votel has occurred.

16. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Votel (US 6,341,393) in view of Chase (US 6,618,880). Votel discloses the invention of claim 1. However, Votel does not teach wherein the mattress is encased in the protector. Chase teaches an impermeable mattress protector (10) enclosing a mattress (20). It would have been obvious to modify the protector of Votel to encase the mattress as a means to *entirely* protect the mattress from soiling (e.g. on all sides). Therefore, it would have been obvious to modify the invention to Votel as specified in claim 27.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN J. LIU whose telephone number is (571)272-8227. The examiner can normally be reached on Monday through Friday, 8 am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Cuomo can be reached on (571) 272-6856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter M. Cuomo/
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